

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/802,018

### REMARKS

In view of the above amendments and the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow Claims 1-4, 6-25, 29-33 and 38-42, as well as newly added Claim 85, the only claims pending and under examination at this time following entry of the above amendments.

Consistent with amendments made and entered in the parent application serial no. 09/602,001, all of currently pending claims under examination have been amended by the above amendments to specify that the chromic change agent, e.g., the diacetylenic compound, is other than liposome and that the color change is triggered by other than a binding pair interaction. As those amendments were made and entered in the parent application of the present application, no new matter has been added by the above amendments and entry of the above amendments therefore respectfully requested. In addition, Claims 21, 22 and 30 have been amended to broaden the temperature range to that of Claim 15. Claim 84 has been cancelled and claim 85 has been added. As this amendment introduces no new matter, its entry by the Examiner is also respectfully requested.

Claims 21, 22-23, 30 and 31 have been provisionally rejected under 35 U.S.C. § 101 as claiming the same invention as that of Claims 1, 7-8, 10 and 12-13 of Application Serial No. 09/602,001. In view of the above amendments to these claims, this rejection may be withdrawn.

Claims 1-4, 6-7, 15-20, 24-25, 29 and 33 have been provisionally rejected under the judicially created doctrine of obviousness type double patenting over Claims 2-6, 11 and 14-15 of Application Serial No. 09/602,001. In view of the enclosed Terminal Disclaimer, this rejection may be withdrawn.

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/892,018

Claims 1-4, 6-14, 15-18, 20-25, 31 and 33 were rejected under 35 U.S.C. § 102(b) as being anticipated by Zhanfang. In view of the above amendments limiting the chromic change agent to other than a liposome (consistent with the Examiner accepted patentable distinguishment of the claims in the parent application over Zhanfang) this rejection may be withdrawn.

Claims 1-4, 6-25, 31, 33 and 38-39 were rejected under 35 U.S.C. § 102(e) as being anticipated by Charych. In view of the above amendments limiting the chromic change agent to one having a triggering event other than a binding pair interaction, (consistent with the Examiner accepted patentable distinguishment of the claims in the parent application over Charych) this rejection may be withdrawn.

Claims 1-4, 6-25, 31, 33 and 38-41 were rejected under 35 U.S.C. § 103(a) as being obvious over Zhanfang in view of Charych.

Consistent with the explanation accepted by the Examiner in allowance of the claims in the parent application, this rejection has been avoided in part by amendment of the claims to recite that the color change trigger is not a binding pair interaction. The rejection is traversed in part because neither Zhanfang nor Charych either alone or in combination is enabling for a color transition in response to any trigger other than (a) binding of an analyte to a receptor for that analyte on a liposome that is incorporated into the biopolymeric material from which the liposome is made or (b) a composition that is not a liposome.

Zhanfang et al. discloses vesicles with a polydiacetylenic lipid matrix embedded with a glycolipid. Furthermore, the compositions disclosed are liposomes and the disclosed trigger for a color change is a binding pair interaction on the surface of the liposome; *E. coli* binds to the liposomes only when DGG is incorporated into them.

The further addition of US 6,303,598 does not overcome the deficiencies of Zhanfang et al. The '598 patent, like Zhanfang, is concerned with liposome compositions used for detecting analytes and the trigger for a color change is a binding pair interaction that occurs in response to binding to an analyte. While there is brief

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/892,018

mention that the detection system can be used for detecting a change in temperature the '598 patent is not enabling for a temperature or pH detection system that would come within the claimed invention. A US patent is deemed enabling only for that which is claimed, and notably the claims (all of which depend from Claim 1) are limited to liposomes and to a color change that is the result of a binding pair interaction between an analyte and a nucleic acid ligand. See Claim 1, below.

1. A composition comprising...a plurality of polymerized self-assembling lipid monomers and one or more nucleic acid ligands, wherein binding of an analyte to said nucleic acid ligand causes a conformational change in said polymerized self-assembling lipid monomers, resulting in a color change in said biopolymeric materials.

'598 patent, col. 81.

Thus not all of the elements of the claimed invention are taught by the cited references either alone or in combination and the Examiner is respectfully requested to withdraw this rejection of Claims 1-4, 6-25, 31, 33 and 38-41 under 35 U.S.C. § 103(a) as obvious over Zhanfang in view of Charych.

Finally, Claims 1-4, 6-25, 29-31, 33 and 38-41 were rejected under 35 U.S.C. § 103(a) as being obvious over Food Color Facts in view of Jo.

Consistent with the explanation accepted by the Examiner in allowance of the claims in the parent application, this rejection is believed avoided by amendment of the claims. For a prima facie case of obviousness under 35 U.S.C. §103(a), there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Applicant respectfully submits that the Examiner has used Applicant's specification as a blue print in order to combine Food Color Facts (USFDA) with USPN 6,277,652; this constitutes improper hindsight reconstruction of the claimed invention. These references are from non-analogous arts (one safety of monomeric food dyes and one analysis of biosamples) and neither one would be

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/892,018

consulted by one of skill in the art of use in ingestibles of polymeric compounds with intrinsic color change capabilities.

Food Color Facts (USFDA) describes in general terms the nature of food color additives, their purpose, and their regulation. The reference does not mention ingestibles capable of changing color as a result of impregnation with a polydiacetylene and exposure to a triggering event. The dyes disclosed are intended not to change color and to remain color fast.

The further addition of USPN 6,277,652 does not cure the deficiencies of the primary reference. The '652 patent discloses a colorimetric sensor comprising polydiacetylene membrane liposomes, a polydiacetylene membrane film, or fine particles coated with a polydiacetylene membrane. The components of the sensor include a receptor protein having a molecular weight low enough to avoid causing a color change in the polydiacetylene membrane incorporated into the polydiacetylene membrane. A color change is triggered when the receptor binds to an analyte, i.e. the trigger is a binding pair interaction. There is no disclosure of a color change that is triggered by other than a binding pair interaction.

One of ordinary skill in the art would not find any motivation in Food Color Facts (USFDA) to seek a reference that discloses a sensor that changes color upon binding to an analyte in a biosample as there is no indication that the disclosed polydiacetylene membranes are physiologically acceptable or that they can be ingested. Indeed, combining the polydiacetylene membranes and films of Jo with an ingestible would be unlikely to result in a colored product. In order to obtain a detectable color change, high concentrations of both receptor and analyte are required. The systems that are described use pure components and nowhere disclose how to make and use these systems with ingestibles, nor is there any reason why one of skill in the art would substitute the biosensors of Jo for the monomeric dyes disclosed in Food Color Facts. Even if such an unlikely substitution was made, this still does not teach the claimed invention. The claims require that the chromic change agent change color at a transition temperature and by other than a binding pair interaction. There is nothing physiologically acceptable about adding large amounts of liposomes, which are in organic solvents such as chloroform:methanol 2:1, containing a purified antigen, such

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/892,018

as HIV envelope protein, or antibody, such as  $\alpha$ -fetoprotein antibody Fab', to food and then adding a sufficient amount of an appropriate binding pair in order to effect a color change in the food. Furthermore, based upon the amounts required to exhibit a color change in a purified sample, the amount of receptor and analyte required would be substantial when scaled up to the size of a food portion.

Neither Food Color Facts (USFDA) nor USPN 6,277,652 discloses the claimed invention. The references are not properly combined and even if it were possible to combine them, the combination does not render obvious Applicant's invention and the Examiner is respectfully requested to withdraw this rejection.

Accordingly, Claims 1-4, 6-25, 29-31, 33 and 38-41 are not obvious under 35 U.S.C. § 103(a) over Food Color Facts in view of Jo and this rejection may be withdrawn.

Attorney Docket No.: SGAN-004CIP  
U.S. Serial No.: 09/802,018

### CONCLUSION

In view of the above amendments and remarks, this application is considered to be in good and proper form for allowance and the Examiner is respectfully requested to pass this application to issuance. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-0315.

Respectfully submitted,

BOZICEVIC, FIELD & FRANCIS LLP

Date: August 13, 2003

By: \_\_\_\_\_

Bret E. Field

Registration No. 37,620

encs

- Petition for Two-Month Extension of Time
- Terminal Disclaimer

BOZICEVIC, FIELD & FRANCIS LLP

200 Middlefield Road, Suite 200

Menlo Park, CA 94025

Telephone: (650) 327-3400

Facsimile: (650) 327-3231

F:\DOCUMENT\sgan\004CIP\response to 3-13-03 office action.doc

RECEIVED  
CENTRAL FAX CENTER

OCT 17 2003

OFFICIAL